Fuel injection nozzle

[0001] The invention relates to a fuel injection nozzle having a cooling duct which is arranged in the combustion chamber side end region of the housing.

[0002] The invention is based on the object of bringing about good cooling of the regions of the injection nozzle which are subjected to high thermal stress.

[0003] This is achieved according to the invention in that the cooling duct is arranged closer to the nozzle needle bore than to the outside of the housing and has a cross sectional face whose width is dimensioned so as to be at most equal to the height extending in the axial direction of the nozzle.

[0004] This measure allows the internal region of the nozzle to be cooled to a greater extent because the cooling medium can be brought closer to the parts which are subjected to high thermal stress. Also as a result of this, a relatively large wall surface of the cooling duct faces these parts. Furthermore, cold corrosion on the outside of the housing is avoided.

[0005] The width of the cooling duct is advantageously 0.1 to 0.9 times the height. According to one preferred embodiment, the width of the cooling duct is approximately 0.25 times the

height.

[0006] The cooling duct preferably extends as far as the height of the nozzle needle seat on the combustion chamber side.

[0007] Further advantageous refinements and expedient developments of the superordinate measures are given in the remaining subclaims and can be found in the exemplary description given below with reference to the drawing.

[0008] The single figure of the drawing shows a vertical section through the parts of an injection nozzle which are essential according to the invention.

[0009] The nozzle has a housing 1 in which a nozzle needle bore 2 with a nozzle needle seat 3 is arranged along the axis A-A of said nozzle. The nozzle needle bore 2 is continuous with a fuel prestorage space 4 which leads to injection bores 5 which project into the combustion chamber (not illustrated).

[0010] A cooling duct 6 is arranged in the housing 1. The width of this cooling duct here is approximately 0.25 times the height extending in the direction of the axis A-A. The width of the cooling duct 6 will generally be dimensioned to be at most equal to the height. The width will preferably be selected in a range from 0.1 to 0.9 of the height. A cooling duct which is formed in this way may be made to extend to close to the

combustion chamber, thus extending into the end region of the nozzle which is subjected to the highest thermal stress. Furthermore, a large wall surface 8 of the cooling duct 6 which faces the internal region of the nozzle is made available for the transfer of heat to the cooling water.

[0011] The cooling duct 6 is supplied with cooling medium by a cooling medium inflow line 7. The cross sectional face of the cooling duct 6 here is approximately twice the cross sectional face of the cooling medium inflow line 7. As a result, a relatively high flow rate of the cooling medium and thus a relatively large rate of dissipation of heat is brought about. Dead water regions are also avoided with this design.

[0012] As is shown by the statements above, the invention is not restricted to the illustrated exemplary embodiment.